

Pulmonary embolism severity index (PESI) beyond pulmonary embolism - does PESI have a role in acute myocardial infarction: a retrospective observational study

Tomislava Bodrožić Džakić Poljak*,
Fran Šaler,
Marin Pavlov,
Aleksandar Blivajs,
Šime Manola,
Ivana Jurin

Dubrava University Hospital,
Zagreb, Croatia

KEYWORDS: acute coronary syndrome, pulmonary embolism severity index, pulmonary embolism.

CITATION: *Cardiol Croat.* 2024;19(11-12):366. | <https://doi.org/10.15836/ccar2024.366>

***ADDRESS FOR CORRESPONDENCE:** Tomislava Bodrožić Džakić Poljak, Klinička bolnica Dubrava, Avenija Gojka Šuška 6, HR-10000 Zagreb, Croatia. / Phone: +385-98-9691-881 / E-mail: tobodrozc@gmail.com

ORCID: Tomislava Bodrožić Džakić Poljak, <https://orcid.org/0000-0002-7293-3972> • Fran Šaler, <https://orcid.org/0000-0002-7293-3972>
Marin Pavlov, <https://orcid.org/0000-0003-3962-2774> • Aleksandar Blivajs, <https://orcid.org/0000-0003-3404-3837>
Šime Manola, <https://orcid.org/0000-0001-6444-2674> • Ivana Jurin, <https://orcid.org/0000-0002-2637-9691>

Introduction: The predictive model for 30-day mortality of patients with acute pulmonary embolism (PE), called pulmonary embolism severity index (PESI) was designed and validated in 2005. It classifies patients into five groups based on clinical indicators, predicting 30-day mortality. It is used in daily clinical practice as a prognostic indicator and as a factor in determining the treatment approach. PESI includes only vital parameters and the most frequent comorbidities.¹ We assumed that the PESI score is not specific for pulmonary embolism and that it could reflect the severity of other conditions, such as acute coronary syndrome (ACS). We aimed to evaluate the role of the PESI score in patients with ACS and to examine its effectiveness in predicting 30-day mortality.

Patients and Methods: This was a retrospective, single-center, observational study conducted at Dubrava University Hospital from January 2017 to December 2023. We included all patients hospitalized for ACS within this timeframe. PESI score and follow-up data were calculated and collected using available electronic health records. The patient registry is registered at ClinicalTrials.gov (NCT06090591). Categorical variables were presented as frequencies and percentages, and continuous variables as median and interquartile range. Survival was analyzed using Kaplan-Meier estimations. Statistical analysis was performed using JASP software (v. 0.19.1).

Results: We included 2312 patients with ACS; (STEMI n=1291, 55.8%; NSTEMI n=995, 43%; uAP n=26, 1.12%). Patients were divided into three risk groups according to PESI score – high risk (N=387); intermediate risk (N=454); and low risk (N=1471). Median age of participants was 64 years (IQR 56-73), and 69% were male. 30-day mortality for the low-risk group was 1.56%, for the

intermediate-risk group was 4.19%, and for the high-risk group was 18.6%; overall mortality was 4.93% (**Figure 1**). Patients with higher PESI scores had higher mortality ($p<0.001$).

Conclusion: PESI score is well validated in predicting mortality in patients with pulmonary embolism. In our study, it was equally good in predicting the mortality of patients with ACS. A higher PESI score accurately reflects the severity of acute conditions such as ACS, in addition to pulmonary embolism.

LITERATURE

1. Dentali F, Riva N, Turato S, Grazioli S, Squizzato A, Steidl L, et al. Pulmonary embolism severity index accurately predicts long-term mortality rate in patients hospitalized for acute pulmonary embolism. *J Thromb Haemost.* 2013 Dec;11(12):2103-10. <https://doi.org/10.1111/jth.12420>

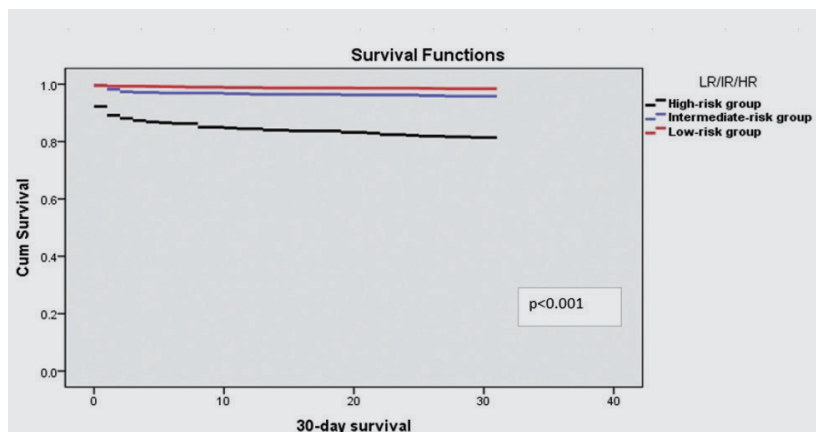


FIGURE 1. 30-day mortality in patients with acute coronary syndrome according to pulmonary embolism severity index score.

HR = high risk; IR = intermediate high risk; LR = low risk

RECEIVED:
October 13, 2024

ACCEPTED:
October 31, 2024

